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National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
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1514-04-020

Anne Badgley
Regional Director
U.S. Fish and Wildlife Service
911 N.E. 11th Avenue
Portland, Oregon 97232-4181

SEP 10 1998

Dear Ms Badgley:

Enclosed is the biological opinion prepared by the National Marine Fisheries Service (NMFS) under section 7 of the Endangered Species Act on proposed 1998 fall season fisheries conducted under the *Columbia River Fish Management Plan*. NMFS has determined that the proposed activity is likely to jeopardize the continued existence of the threatened Snake River steelhead, primarily due to effects on the wild B-run component. The NMFS, through extensive negotiations with the *U.S. v. Oregon* parties, with thorough involvement of the U.S. Fish and Wildlife Service, has developed a Reasonable and Prudent Alternative, which NMFS believes will avoid jeopardy to Snake River steelhead if implemented this year. The Alternative establishes an incidental harvest rate objective for treaty Indian fisheries of 10% for wild Snake River B-run steelhead with a harvest rate cap of 15%. The allowable harvest rate on wild B-run steelhead in the non-Indian commercial and recreational fisheries is 2%.

NMFS has further determined that the proposed activities will not result in jeopardy to listed Upper Columbia River and Lower Columbia River steelhead, and Snake River fall chinook salmon. NMFS also concluded that the proposed activity is not likely to result in the destruction or adverse modification of critical habitat that has been designated for chinook salmon.

Because this opinion has found jeopardy, the USFWS is required to notify NMFS of its final decision on the implementation of the reasonable and prudent alternative.

Sincerely,

William Stelle, Jr.
Regional Administrator

Enclosure

cc: CRFMP Parties
B. Bosch — TAC Chair
R. Eggers — Bureau of Indian Affairs

Endangered Species Act - Section 7
Consultation

BIOLOGICAL OPINION

REINITIATION OF CONSULTATION TO CONSIDER IMPACTS TO LISTED STEELHEAD RESULTING FROM 1998 FALL SEASON FISHERIES CONDUCTED UNDER THE COLUMBIA RIVER FISH MANAGEMENT PLAN AND 1996-1998 MANAGEMENT AGREEMENT

Agency: U.S. Fish and Wildlife Service
National Marine Fisheries Service
Bureau of Indian Affairs

Consultation Conducted By: National Marine Fisheries Service,
Northwest Region

Date Issued: SEP 10 1998

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I. Background

The purpose of this reinitiated biological opinion is to consider whether fall season fisheries conducted under the Columbia River Fish Management Plan (CRFMP) and 1996-1998 Management Agreement for Upper Columbia River Fall Chinook are likely to jeopardize the continued existence of steelhead species currently listed under the Endangered Species Act (ESA) or result in the destruction or adverse modification of their critical habitat. The effect on listed Snake River sockeye salmon, spring/summer chinook salmon, and fall chinook salmon from the fall season fisheries were considered in a 1996 biological opinion and subsequent addendum (NMFS 1996, Holt 1996). The 1996 opinion concluded that the fall season fisheries were not likely to jeopardize listed Snake River chinook or sockeye species. Three steelhead Evolutionarily Significant Units (ESUs) have subsequently been listed. Consultation has therefore been reinitiated. This opinion does not affect the conclusions with respect to Snake River chinook or sockeye species and all applicable provisions of the 1996 biological opinion and addendum remain in effect.

A biological assessment regarding steelhead impacts in the fall season fisheries was prepared by the U.S. v. Oregon Technical Advisory Committee (TAC 1998) and provided to the National Marine Fisheries Service (NMFS) by the U.S. Fish and Wild Service (USFWS) on June 18, 1998 (Dwyer 1998a). The biological assessment described several fishery options which covered a broad range of impacts to listed steelhead. Subsequent discussions sought to narrow those options. However, in addition, the normal course of consultation was delayed as the Federal and the Columbia River Tribal parties to the CRFMP sought to reach a settlement which would harmonize the relationship between the ESA and treaty fishing rights consistent with the Federal Trust responsibilities. The intention of the Federal and Tribal parties was to include the State parties in the settlement and to submit a Stipulated Agreement and Order for the court's approval under the continuing jurisdiction in U.S. v. Oregon. The Federal/Tribal intention was also that this agreement would constitute compliance with the ESA, based on the authority of the Attorney General of the United States to settle litigation. The Federal and Tribal parties submitted their Stipulated Agreement and Order to the U.S. v. Oregon court for its acceptance and enforcement of their agreement. The States, which had not reached agreement with the Federal and Tribal parties, asserted that no agreement on the fall fisheries would be proper unless NMFS completed a biological opinion finding that the agreed fisheries would not jeopardize listed steelhead. Accordingly, the States opposed the Federal-Tribal motion and urged the court not to adopt the Agreement. The Court agreed with the State parties, concluded that NMFS should complete a biological opinion regarding the proposed fisheries (Marsh 1998).

To avoid an unnecessary disruption in fisheries pending completion of the opinion, NMFS made the initial determination that fisheries to date and those anticipated through September 12, 1998 were not likely to jeopardize the continued existence of listed steelhead and thus did not constitute an irreversible or irretrievable commitment of resources that would foreclose the implementation of any reasonable and prudent alternative. Based on these conclusions NMFS authorized the continuation of the proposed fisheries through September 12, 1998 in accordance with section 7(d) of the ESA (Stelle 1998). This biological opinion considers the combined

impact to listed steelhead of all fall season fisheries within the scope of the proposed action from August 1 through the end of the year.

II. Proposed Action

This biological opinion considers the effects to listed Upper Columbia River (UCR), Snake River Basin (SRB), and Lower Columbia River (LCR) steelhead from 1998 fall season fisheries that are subject to the CRFMP and 1996-1998 Management Agreement. The fisheries considered are described in detail in the biological assessment (TAC 1998). For purposes of the CRFMP the fall season runs from August 1 though December 31. Fall season non-treaty fisheries generally include all mainstem, Select Area, and tributary, commercial and recreational fisheries in the Columbia River below Priest Rapids Dam. Treaty Indian fisheries include commercial and ceremonial and subsistence (C&S) fisheries occurring during the fall season in the mainstem Columbia River above Bonneville Dam and tributary fisheries in the Klickitat, Yakima, Deschutes, and Umatilla Rivers.

For tribal fisheries the biological assessment describes a range of fishery options with a broad range of potential impacts to listed steelhead. These options were narrowed through the consultation process. The final proposal being considered here is to manage the tribal fall season fisheries in Zone 6 according to the CRFMP, the 1996-1998 Fall Management Agreement and with respect to steelhead to manage using a 15% incidental harvest rate goal and 20% incidental harvest rate cap for SRB wild B-run steelhead (Disheroon 1998). This proposal is most closely approximated by model run 98-2B in the biological assessment.

Wanapum tribal fisheries are also considered. The Wanapum Tribe in not a federally recognized tribe, but is a distinct group of Indians who live next to Priest Rapids Dam. The tribe is not included as part of the four Columbia River treaty tribes, nor are they party to U.S. v. Oregon. A Washington State statute authorizes the Director of the Department of Fish and Wildlife to issue permits for subsistence fishing for spring chinook, sockeye, and fall chinook. The Grant County PUD has historically acted as a liaison between the tribe and state fishery managers and will continue to do so. Impacts resulting from Wanapum fisheries are not counted against allowable treaty Indian impacts.

Also considered here is the proposal to trap Bonneville Pool Hatchery (BPH) fall chinook at Bonneville Dam. The USFWS provide an addendum to the original biological assessment (Dwyer 1998) requesting that the proposed trapping be considered as part of the fall season harvest proposed action. The trapping operation is a management measure being implemented to supplement an anticipated escapement shortfall of the BPH stock. The trapping is related to fall season harvest management because it reduces certain management constraints and allows more aggressive fishing directed at the peak of the fall chinook run. This has the added benefit of reducing impacts to listed steelhead. The assessment considers the potential adverse affects of delayed passage and handling on adult salmon and steelhead and passage mortality on migrating juvenile salmonids.

III. Listed Species and Critical Habitat

No Snake River sockeye or spring/summer chinook are expected to be taken in the 1998 fall season fisheries, due to run timing. The fisheries considered here are consistent with the CRFMP and 1996-1998 Management Agreement for upper Columbia River fall chinook, and with the analysis of that Agreement considered in the original biological opinion (NMFS 1996). The fisheries considered in the current opinion are proposed to be managed consistent with the harvest rate guidelines of the Agreement, and no impacts to Snake River fall chinook salmon in excess of those considered in the Agreement are expected. Therefore, the impacts of the fisheries on Snake River sockeye and spring/summer and fall chinook salmon will not be considered further in this opinion.

Three steelhead (*Oncorhynchus mykiss*) ESUs occurring in the Columbia River Basin are currently listed under the ESA. On August 18, 1997, SRB steelhead were listed as threatened and UCR steelhead were listed as endangered (62 FR 43937). The UCR listed population includes steelhead produced at Wells Hatchery. The Wells Hatchery steelhead stock was derived from steelhead populations native to the UCR area, and has been determined useful and necessary for recovery of the ESU. On March 19, 1998, the LCR ESU was listed as threatened (63 FR 13347).

The listing status, biological information, and habitat requirements for LCR, UCR, and SRB steelhead are described by Busby et al. (1996). Critical habitat has not yet been designated or proposed for these ESUs.

In addition, several other salmonid ESUs in the Columbia River Basin have been proposed for listing under the ESA. These ESUs include:

- the Upper Willamette River and Middle Columbia River steelhead ESUs (both proposed as threatened) (63 FR 11798; March 10, 1998);
- the Upper Willamette River and Lower Columbia River chinook salmon ESUs (both proposed as threatened) (63 FR 11482; March 9, 1998);
- the Upper Columbia River spring chinook salmon ESU (proposed as endangered) (63 FR 11482; March 9, 1998); and
- the Columbia River chum salmon ESU (proposed as threatened) (63 FR 11774; March 10, 1998).

While the fisheries considered here may have some impacts on most of these ESUs proposed for listing, the conservation actions already taken to protect Snake River fall chinook and those considered here to protect listed steelhead are expected to benefit other species of salmonids as well. Because of the circumstances which require preparation of this opinion in a very short time frame conferencing with respect to proposed species has not been undertaken.

IV. Biological Information

Biological information regarding the status of west coast steelhead is described in Busby et al. (1996). The more recent All Species Review (ASR) prepared by the U.S. v Oregon TAC focussed on the status of Columbia River Basin salmonids, including steelhead (TAC 1997). In April 1998, NMFS summarized the available information pertaining in particular to then listed UCR and SRB steelhead ESUs. (This latter report is appended to this biological opinion as Appendix 1). Because questions related to jeopardy are critically dependent on the status of the species of concern, some of the pertinent conclusions from these reports are summarized below.

It is first useful to clarify the relationship between stock designations used for management purposes under the CRFMP and ESUs considered under the ESA. Steelhead stocks in the Columbia Basin have traditionally been distinguished as summer or winter-run stocks based on their state of sexual maturity and time of river entry. Summer-run steelhead were divided further as A-run and B-run steelhead based on age differences and run timing. Each of these have both a hatchery and wild component. ESU designations, based in part on genetic affinities, do not correspond with these traditional stock divisions. For example, both winter steelhead and summer-run steelhead are included in the LCR ESU. All B-run steelhead return to the Snake River, but the Snake also has an A-run component within the ESU. The UCR ESU is comprised of hatchery and wild A-run fish. Because of past practice, management data bases are aligned with the traditional A-run/B-run, hatchery/wild designations . The following discussion is organized by ESU, but continues to rely on A-run and B-run data bases.

The LCR steelhead ESU includes both winter and summer run fish. The ESU includes steelhead returning to tributaries from the Cowlitz to Wind rivers on the Washington side and from the Willamette to Hood rivers on the Oregon side. Winter run steelhead enter the Columbia River from November through May and are therefore little affected by fall season fisheries which occur primarily from August through October. Impacts to the summer run component of LCR steelhead are limited because they are susceptible to fisheries only in the lower river and, to a lesser extent, in Bonneville Pool. The combined impacts to LCR steelhead from fall season fisheries are therefore quite low, and although considered and reported here, are not reviewed or analyzed in great detail.

The abundance of UCR wild steelhead to Priest Rapids dam has declined from a 3-year average of 3,000 in 1986/87 to 900 at present, both of which are to be compared to an escapement need of approximately 4,500. Replacement ratios of naturally spawning fish are on the order of 0.3, meaning that for every naturally spawning fish only 0.3 adults are returning to spawn. UCR hatchery steelhead are included in the ESU and are also currently listed as endangered. The hatchery component is relatively abundant and routinely exceeds hatchery program needs by a substantial margin. (Because of the relative abundance of hatchery fish and the unnecessary restrictions resulting from their listing as endangered, NMFS is currently considering delisting the hatchery component of the UCR ESU.) The naturally spawning population of UCR steelhead have been augmented for a number of years by naturally spawning hatchery fish. These hatchery fish are thought to have benefitted the ESU by maintaining an infusion of spawners during a time when the inherent productivity of the system has been well below replacement. NMFS recently issued a Section 10 permit (February 4, 1998, permit number 1094) that

authorizes supplementation of the natural population with hatchery fish and diversifying hatchery broodstocks used to incorporate wild fish to minimizes differences between the two. Efforts are underway to diversify broodstocks used for supplementation purposes and minimize the differences between hatchery and natural-origin fish to minimize the concerns associated with supplementation. In issuing the permit, NMFS anticipated a benefit to the listed fish due to the survival advantage expected from the hatchery action. However, there are also substantive concerns about the long term effect on the fitness of wild populations resulting from continuous long term infusion of hatchery-influenced spawners (Busby et al. 1996). In summary, the hatchery component of the UCR listed steelhead is relatively abundant with a stable population, while the natural component is depressed and appears to be composed substantially of progeny of naturally spawning hatchery fish.

The SRB ESU has both an A-run and B-run component. The abundance of SRB wild A-run steelhead has declined from a 3-year average of 19,100 in 1985/86 to 7,300 at present, both of which are to be compared to an escapement goal to Lower Granite Dam of 20,000. The Idaho Department of Fish and Game (IDFG) monitors parr densities of wild A-run steelhead. Parr densities in index streams have declined from 75% of carrying capacity in 1985 to an average of 35% in recent years.

The abundance of A-run hatchery steelhead remains relatively high. However, none are listed and most hatchery steelhead stocks are not considered part of the ESU. Those stocks which are not part of the ESU are not expected to be used to assist in recovery of listed SRB steelhead. The Imnaha (fish returning to Little Sheep Creek) and Oxbow hatchery stocks are part of the ESU. The Imnaha hatchery stock was derived from the local steelhead population and may have some role in ESA recovery. The Oxbow hatchery stock was derived from native fish originating from the upper Snake River above the Hells Canyon Dam complex and its potential role in future supplementation efforts has not been defined. Supplementation of natural populations with artificial propagation is expected to be one of the recovery measures utilized by NMFS. However, for SRB A-run steelhead, this will likely require development of new broodstocks derived from remaining natural populations. This will be complicated by the large size, complexity, and inaccessible nature of much of the Snake Basin.

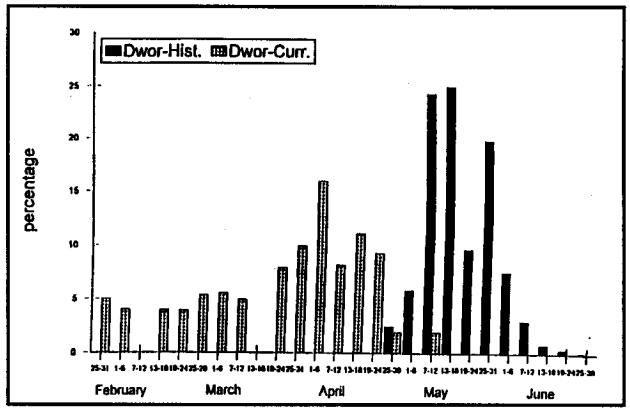
The substantial rate of decline of SRB A-run steelhead clearly indicates that productivity rates are below replacement levels and cannot be sustained under current conditions. Substantial improvements in survival throughout the life cycle will be needed. Perhaps the only mitigating factor in considering the status of SRB A-run steelhead is that the fish are still reasonably abundant relative to escapement objectives, suggesting that there may be time to implement the necessary improvements.

The abundance of SRB wild B-run steelhead to Lower Granite Dam has declined from a 3-year average of 5,600 to 800 since 1985/86. The current escapement goal for SRB wild B-run steelhead to Lower Granite Dam (LGD) under the CRFMP is 10,000, but IDFG estimates that an escapement of 33,000 to LGD is needed to achieve 70% juvenile seeding in wild and natural production areas (IDFG undated). There are approximately 3,100 miles of potential spawning

habitat in the Clearwater and Salmon River basins. Parr densities in index streams have been relatively stable averaging 10-15% of carrying capacity since 1985.

There is one B-run hatchery stock in the Snake Basin at the Dworshak National Fish Hatchery. The stock was developed from wild steelhead from the North Fork Clearwater above Dworshak Dam, an area that is no longer accessible. This hatchery stock is largely free of introductions from other areas, and was included as part of the ESU, although not part of the listed population. The Dworshak stock is also genetically quite distinct from all other steelhead including other wild B-run stocks, suggesting that it may have been uniquely adapted to its ancestral range. Additionally, past hatchery practice has led to substantial divergence from wild stock life history characteristics. The spawn timing of hatchery stocks is much earlier than it was historically ([[see following figure). IDFG conclude that both A and B-run hatchery stocks are largely domesticated and have demonstrated limited ability to spawn in natural habitats or produce natural offspring that contribute to sustained adult escapement (Idaho 1997). Supplementation plans using Dworshak Hatchery steelhead are being developed. These plans identify the need for altering spawning timing back to historical timing. If successful, this may improve their reproductive success in the wild.

As is the case with the UCR ESU, hatchery steelhead in the Snake Basin are relatively more abundant. However, unlike the situation in the UCR, immediate opportunities to implement supplementation programs, though likely to be pursued, will be complicated by limitations on suitable, available broodstocks and again, the size, complexity and inaccessibility of the Snake River Basin. The potential benefit of supplementation is therefore more remote and less certain than is the case with UCR steelhead and therefore less of a mitigating factor when considering the status of the B-run steelhead and the ESU as a whole.



Information to date regarding steelhead returns in 1998 are not encouraging. The A-run steelhead return to Bonneville Dam for 1998 was completed on August 26. Based on the date method, the combined hatchery/wild A-run return was 83,800 fish, less than half of the preseason forecast (179,000), and 60% of the recent 10-year average. The 26,000 wild A-run return is 90%

of the preseason forecast, but only 74% of the recent 10-year average (and 42% of the Bonneville Dam escapement goal). While it is too early in the run to update the B-run return projection, there is general concern that the B-run will likely also be lower than the preseason expectation. In addition, returns to the Upper Columbia River are lagging well behind expectation, indicating that all components may be significantly delayed in the lower river, probably due to high mainstem temperatures.

This review of the biological status of the listed steelhead leads to the conclusion that all are at risk of extinction, but that the B-run segment of the SRB ESU is at particular and immediate peril. As will become apparent below, this opinion emphasizes measures designed to limit impacts to B-run steelhead. This results from the above comparative analysis of risks and from the fact that impacts in fall season fisheries are generally higher on B-run steelhead due to their larger size and later timing relative to A-run steelhead. As a result, measures designed to limit impacts to B-run steelhead generally provide even greater protection to A-run. B-run steelhead therefore serve in this context as the limiting stock.

V. Evaluating Proposed Actions

The standards for determining jeopardy are set forth in section 7(a)(2) of the ESA as further defined in 50 CFR Part 402 (the consultation regulations). NMFS has discussed the analysis necessary for application of these standards in the particular contexts of the listed Snake River salmon species (NMFS 1995). These same procedures are applied here in analyzing impacts to listed steelhead to the extent possible based on the available information. This analysis involves the following steps: (1) Define the biological requirements of the listed species; (2) evaluate the relevance of the environmental baseline to the species' current status; (3) determine the effects of the proposed or continuing action on listed species; (4) determine whether the species can be expected to survive with an adequate potential for recovery under the effects of the proposed or continuing action, the environmental baseline and any cumulative effects, and considering measures for survival and recovery specific to other life stages; and (5) identify reasonable and prudent alternatives to a proposed or continuing action that is likely to jeopardize the continued existence of the listed species.

A. Biological Requirements

The first step in the method NMFS uses for applying the ESA standards of section 7 (a)(2) to listed salmon is to define the species' biological requirements that are most relevant to each consultation (NMFS 1995). For this consultation, NMFS finds that these biological requirements are best expressed as trends in population size and variability. This information is reviewed in Busby et al. (1996) and the recent ASR prepared by TAC (1997) and is summarized briefly in section IV above.

B. Environmental Baseline

A description of the current range-wide status of the listed steelhead species under the environmental baseline is currently being developed. The biological requirements of the listed species are currently not being met under the environmental baseline, which is apparent from the species' declining status in recent years (Busby et al. 1996, Schiewe 1997). Any further degradation of these conditions would have a significant impact due to the amount of risk the listed steelhead presently face under the environmental baseline.

VI. Analysis of Effects

A. Effects of Proposed Action

Two methods are currently being used to divide the estimates of total steelhead run size between the A-run and B-run components. Because the methodology affects the estimates of harvest rate, it is important to clarify which method is being assumed when discussing harvest rate impacts and limits in this biological opinion.

Historically, the total steelhead run size was separated into its A-run and B-run components at Bonneville Dam and in the Zone 6 fishery primarily by date. In response to an apparent change in the run timing of steelhead run components, and to assess component-specific run size at locations upstream of Bonneville Dam, an alternative method for separating A-run and B-run steelhead has been developed based on fish length. The two methods provide somewhat different estimates of component run size, with the length method generally indicating a smaller B-run size and a more pronounced decline in wild B-run returns after 1988 than the date method. At this time we are unable to distinguish which of the methods is more accurate. It is apparent that both methods have shortcomings and neither likely accurately estimates the true run size. Ongoing GSI studies should help sort out a preferred methodology, but the necessary data is not yet available. In the meantime, the date method provides an index of harvest that is consistent with existing harvest guidelines and therefore useful as a benchmark. For purposes of this biological opinion, harvest rate limits are specified assuming use of the date methodology.

Nontreaty fall season recreational fisheries primarily target fall chinook and hatchery-origin steelhead. All hatchery-origin steelhead are marked with an adipose fin clip. State fishing regulations require the release of all unmarked steelhead. Listed natural-origin steelhead are caught and released and are thus subject to a hooking mortality which is estimated as [10% of the [released catch.

Nontreaty commercial fisheries in 1998 will target sturgeon and fall chinook. No target coho fisheries are anticipated in 1998. The retention of steelhead in commercial fisheries is prohibited. Impacts to steelhead in commercial fisheries are minimized with time, area, and gear restrictions. Mainstem commercial fisheries targeting either chinook or sturgeon have a 9-inch minimum mesh size restriction which effectively passes most steelhead. The commercial fisheries also tend to operate in deeper, offshore areas where the more shore-oriented steelhead are less likely to occur.

Select Area fisheries are conducted in off-mainstem areas and target hatchery-reared and locally acclimated fish. Because of the location of these select area fisheries, few steelhead are handled.

The combined nontreaty harvest rate on wild A-run and B-run steelhead is 2.0% or less (Table 1). Listed hatchery-origin UCR steelhead are marked and thus not released in the mainstem sport fisheries. The anticipated harvest rate on UCR hatchery-origin steelhead is 13.8%. Nontreaty fisheries targeting steelhead above the highway 395 Bridge, just above the confluence of the Snake River, are closed. The anticipated harvest rate on LCR steelhead from nontreaty fisheries is 0.3%.

The Wanapum tribal fishery targets fall chinook in an area below Priest Rapids Dam during the month of September. The expect catch of chinook is less than 500. An 8-inch mesh size restriction is in place and steelhead retention is prohibited although handling mortality is relatively high (estimated to be 60%). The expected mortality of UCR steelhead is less than 30 (26 hatchery and 4 wild) or about 0.2% of UCR wild steelhead and 0.3% of UCR hatchery steelhead. Because of the location of the Wanapum fishery, it has no impact on LCR or SRB steelhead.

Fall season treaty Indian fisheries in Zone 6 include both commercial and C&S fisheries with the catch consisting primarily of fall chinook and steelhead. Chinook are generally more abundant than steelhead and provide the primary objective for the fishery, but steelhead are targeted and retained as well, as this provides the primary opportunity for the tribes to access their allocation of steelhead. The shore-based setnet and platform fisheries of the tribes tend to encounter more steelhead because of their near-shore orientation.

The Zone 6 fishery proposed by the tribes has both harvest and conservation objectives consistent with those of the CRFMP and 1996-1998 Management Agreement. The principal harvest objective is to achieve 50% of the harvestable surplus of fall chinook, as defined in section II.I of the CRFMP. The conservation objectives include remaining within the Snake River fall chinook guideline, achieving the escapement goals at Spring Creek Hatchery and McNary Dam, and reducing impacts to steelhead to the extent possible while achieving the other objectives. During the course of the consultation the tribes more clearly defined the goal of limiting the harvest rate on wild B-run steelhead to 15% with a maximum of 20% if necessary to achieve the fall chinook harvest objective. This compares to a 32% wild B-run harvest rate allowed for under the CRFMP. This management approach therefore sets the limit of the anticipated wild B-run harvest rate at 20%. The associated anticipated harvest rate on wild and hatchery A-run steelhead are both 7.9%.

Table 1. The anticipated harvest rates on listed steelhead resulting from proposed 1998 fall season fisheries.

		Anticipated Harvest Rates (%)			
ESU	Run	Nontrty	Treaty	Wanapum	Total
LCR		0.3	0.3	0.0	0.6
UCR	Wild A-Run	2.0	7.9	0.2	10.1
	Hatchery A-Run	13.8	7.9	0.3	22.0
SRB	Wild A-Run	1.7	7.9	0.0	9.6
	Wild B-Run	1.8	20.0	0.0	21.8

The USFWS reviewed potential impacts to both juvenile and adult migrants associated with the BPH trapping operation and concluded that the adverse effects would be negligible and substantially outweighed by the benefits that would accrue (reduced steelhead harvest) as a result of the increase in harvest management flexibility (Dwyer 1998).

B. Critical Habitat

Critical habitat has not been designated for the listed steelhead. Consideration of critical habitat impacts therefore will not affect the conclusions regarding the jeopardy analysis. However, for other listed salmonids critical habitat has included the migration corridor where these fisheries occur. Harvest activities do affect passage in that fish are intercepted, but those impacts are accounted for explicitly in the above analysis. These harvest activities do not otherwise result in the destruction or adverse modification of the migration corridor.

C. Cumulative Effects

Cumulative effects are defined in 50 CFR 402.02 as "those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." No such effects are anticipated. For the purposes of this analysis, the action area encompasses the Columbia River from its mouth up to Priest Rapids Dam, including its tributaries. Future Federal actions, including the ongoing operation of hydropower systems, hatcheries, fisheries, and land management activities are being (or have been) reviewed through separate section 7 consultation processes. In addition, non-Federal actions that require authorization under section 10 of the ESA will be evaluated in

section 7 consultations. Therefore, these actions are not considered cumulative to the proposed action.

VII. Conclusion

In analyzing the question of jeopardy Federal agencies must consider whether proposed actions are likely to (1) jeopardize the continue existence of any listed species, or (2) result in the destruction or adverse modification of critical habitat. The phrase "jeopardize the continued existence" is define as "to engage in an action that would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species." 50 CFR 402.02.

The proposed fall season fisheries have the greatest impact on wild B-run steelhead with anticipated harvest rates in the combined treaty and nontreaty fisheries of up to 22%. As is outlined in Part IV, wild B-run steelhead have declined in recent years to very low levels, particularly relative to the substantial expanse of available habitat. It is relevant that the B-run steelhead are one of two components of the ESU, so that it could be argued that the loss or additional risk to this component does not put the ESU as a whole at risk. However, B-run steelhead represent a substantial, unique, and internally diverse part of the larger ESU. NMFS concludes that it would be improper to avoid the protections provided to B-run steelhead based on an argument they are not a significant part of the broader ESU. Although there is no bright line standard for this kind of determination, NMFS concludes that a 22% harvest rate resulting from this discretionary activity would appreciably reduce the number of listed species sufficiently to affect the likelihood of survival and recovery, particularly given the very low levels of anticipated escapement relative to the available habitat. With escapements of wild B-run steelhead to LGD averaging less than 1,000 fish in recent years, there is concern that fish densities will be sufficiently low that spawners will have difficulty finding mates.

The SRB ESU also has an A-run component which is again considered a significant portion of the ESU. The anticipated harvest rate from the fall season fisheries on SRB wild A-run steelhead is approximately 10%. The status of SRB wild A-run steelhead is declining and depressed, but still, at least compared to B-run steelhead, relatively abundant compared to its available habitat. Based on this NMFS concludes that the proposed fall season fisheries do not reduce appreciably the likelihood of survival and recovery of wild A-run steelhead. However, because of the anticipated impacts to B-run steelhead, NMFS concludes that the proposed action is likely to jeopardize the continued existence of SRB steelhead.

The jeopardy analysis relative to UCR steelhead also must be taken in two parts by considering the anticipated impacts to both the listed hatchery and wild components. The total harvest rate on UCR hatchery steelhead is also coincidentally 22% although the distribution of impacts between fisheries differs (see Table 1). As discussed in Part IV, UCR hatchery steelhead are necessary to the future recovery needs of UCR steelhead, but are abundant relative to hatchery escapement and supplementation program needs. Limitations resulting from the current listing of the hatchery component as endangered affects NMFS' ability to balance the relative abundance of

wild and stray hatchery-origin fish. As a result, NMFS is currently considering delisting the hatchery component of the UCR ESU.

The anticipated harvest rate on UCR wild-A run steelhead is approximately 10%. As described in Section IV, the run is declining and depressed relative to the production capacity of the system with very low replacement rates. The availability of appropriate broodstock for supplementation purposes and immediate opportunities to further diversify that broodstock help mitigate what would otherwise be a very substantial concern regarding the status of the wild fish. Based on these considerations for both the listed hatchery and wild components of UCR steelhead, NMFS concludes that the proposed fall season fisheries are not likely to jeopardize the continued existence of UCR hatchery or wild steelhead.

The USFWS concluded, and NMFS concurs, that impacts to listed steelhead or other salmonids from the BPH trapping operation are negligible and outweighed by the potential benefits resulting from the increased management flexibility and reduced harvest of listed steelhead. Implementation of BPH trapping therefore does not affect any of the conclusions described above with respect to jeopardy.

VIII. Reasonable and Prudent Alternative

The regulations implementing section 7 of the ESA (50 CFR 402.02) define reasonable and prudent alternatives as alternative actions, identified during formal consultation, that (1) can be implemented in a manner consistent with the intended purpose of the action, (2) can be implemented consistent with the scope of the action agency's legal authority, (3) are economically and technologically feasible, and (4) would, in NMFS' judgement, avoid the likelihood of jeopardizing the continued existence of listed species and avert the destruction or adverse modification of critical habitat.

Because NMFS has found jeopardy as a result of impacts to SRB wild B-run steelhead it must consider how the action can be modified, consistent with the first three considerations listed above and then reconsider whether the alternative action is still likely to jeopardize. The purpose of this action is to catch harvestable fish from healthy wild and hatchery stocks - primarily Columbia River fall chinook and hatchery steelhead. Because of conservation concerns, the fisheries must be conducted in a way that minimizes impacts to the listed steelhead to the maximum extent possible. It is therefore necessary in conducting these fisheries to consider the use of all reasonable measures to reduce impacts to wild B-run steelhead.

State recreational fisheries have been managed for the last [20 years or more to selectively target hatchery steelhead while requiring the release of all unmarked wild fish. As a result, the incidental mortality to wild fish from the fishery have been reduced to very low levels. There are some legitimate concerns about the production programs that support these fisheries. However, these are not the subject of this consultation and are more properly considered through consultation on the production programs themselves. NMFS will require that the states continue to take all reasonable actions to reduce impacts to wild fish in conducting their recreational

fisheries. The one additional area that NMFS is aware of that may be appropriate in this context is the regulation of harvest in cold water refugia during times of elevated temperatures in the mainstem when passage is significantly delayed.

There are relatively few commercial fisheries proposed by the States at this time. Use of mesh size regulations and the timing and placement of these fisheries are sufficient to limit impacts to steelhead to very low levels and NMFS is unaware of additional measures that should be considered at this time. The combined harvest rate from State fisheries to wild B-run steelhead is less than 2%.

The greatest harvest impact to wild B-run steelhead occurs in tribal fisheries. In the course of planning fisheries for the 1998 season the tribes have agreed to take management actions to limit their catch of B-run steelhead to not exceed 20% which is a substantial reduction from the 32% harvest rate that would otherwise be allowed under the CRFMP. It is appropriate to consider the nature of the tribal fishery as it helps explain, at least in part, why impacts in their fisheries are substantially higher.

Tribal fishing sites are shore-based with "ownership" accruing to individuals or families based on traditional lines of inheritance. These shore-based fisheries are conducted primarily with setnets, with hook-and-line, or from platforms. Because steelhead tend to migrate along the shoreline, they are more susceptible to catch in tribal fisheries. The nature of the fishery therefore limits the options that might be considered "economically and technologically feasible" at least within the time frame of the remaining 1998 fall season. For example, using driftnets fished offshore in a manner similar to nontreaty commercial fishermen is not an immediate option available to the tribes as, for the most part, they have neither the boats or nets to fish in that manner. Further, it would be more difficult to find appropriate drift sites in the lake-like reservoirs of the Zone 6 treaty fishing area.

The use of 9-inch minimum mesh size regulations could be used to reduce impacts to steelhead. However, not all fisherman have 9 inch gear (Bosch et al. 1998) and the cost and available time prevent the large scale net conversion that would be necessary in 1998. Although conversion to a larger mesh fishery is under active consideration with applicable research programs in place both in 1997 and 1998, there are concerns about potential adverse impacts to chinook stocks resulting from the selectivity of the larger gear. These risks and benefits need to be weighed before proceeding with a move to a large mesh fishery, which is again beyond to scope of what can be done this year.

Nevertheless, there are management actions that can be taken to reduce steelhead impacts. Implementation of 8-inch minimum mesh size restriction are feasible as the necessary gear is more readily available. Fisheries can be concentrated on the peak of the chinook run timing to maximize the chinook-to-steelhead catch ratio. Site specific time and area management can be used to minimize steelhead impacts that depend on the familiarity of fisherman with respect to specific sites and the behavior of the fish. Fisheries that use live capture gear (hoopnets, dipnets, and hook-and-line) can be required to release unmarked fish. Since the relative abundance of

wild fish is low, about 21% of the total steelhead run, the impact on catch from retention limits would not be prohibitive. Finally, impacts to listed fish can be limited directly through a cap on harvest. The cap is a necessary ingredient both for consultation and management purposes as it leaves the discretion for how to manage the fishery to the tribes while providing a constraint that is necessary to avoid jeopardy.

In planning and implementing the fall season fisheries the tribes have used many of the above management measures including mesh size restrictions, fishing the peak subject to conservation concerns for Spring Creek Hatchery fish, and agreed to manage their fishery so as not to exceed a 20% harvest rate on wild B-run steelhead. As a result, the options for providing further reductions "consistent with the intended purpose of the action" are limited. However, it was apparent through discussions related to the fall fishery that there was an opportunity to further reduce wild stock impacts through the selective release of unmarked fish in the live-capture fisheries and that the harvest rate reduction benefit would be on the order of 5% depending of the duration of application of the unmarked fish release requirement. The potential savings were summarized in a table of comparative model runs (Anon. 1998). The tribes were reluctant to implement selective regulations because of the traditional nature of the fishery and concerns related to enforcement. However, it remains as one of the management measures that could be used to further limit impacts to listed steelhead. Given the immediate conservation concerns for listed steelhead, avoiding wild SRB steelhead now must become a primary consideration in conducting these same fisheries. Based on the jeopardy conclusion of this opinion, other innovations may be developed that will lead to further opportunities to reduce impacts.

The preceding paragraph suggests that a reasonable and prudent alternative that is consistent with the first three requirements of an RPA is to manage the treaty Indian fall season fishery using a 10% wild B-run harvest rate as a management objective and 15% as a harvest rate cap. NMFS would leave it to the discretion of the tribes to select from available management actions to achieve this objective.

The next task then is to consider whether this alternative will meet the jeopardy standard. As an initial matter in considering this difficult question it is important to acknowledge that SRB steelhead are at risk of extinction as is indicated by their status as listed species. This has come about as a result of the effects of a broad range of past and ongoing human activities and natural factors which in aggregate have contributed to the decline and lead to the current status of the species. The action being considered here is not the last in a chain of sequential events that has put these species at risk. It is instead one action in a continuous cycle of actions that have contributed to the decline of the species. Clearly, if the aggregate effect of all mortalities are not significantly reduced, the species will continue to decline to extinction.

A jeopardy analysis must be based on the best scientific and commercial data available. Ideally, this would include a review of the species status, the environmental baseline, and a comprehensive and simultaneous quantitative analysis of all human induced and natural factors effecting the species' survival. This analysis would provide a measure of the level of survival improvements that were necessary and perhaps even a tool for balancing of the equities related to

sharing the burden on conservation, a balancing that would occur outside of the consultation process in a broader policy forum. This ideal is rarely achieved and certainly no such analysis, even in its crudest form, is available at this time. We do not know the measure of survival improvements that must be achieved for SRB steelhead. However, it is apparent from the review of the species' status that substantial improvements in survival relative to the environmental baseline are required. In analyzing the jeopardy question from a biological perspective, particularly during a period of species decline, it is reasonable to assume that all actions should be expected to demonstrate and maintain some substantial measure of reduced mortality until such time that a more comprehensive and objective analysis of risk can be developed that better informs that decision. It is unavoidable that the determination of jeopardy under these circumstances will be a matter of judgement based on the available data.

Fall season fisheries have been managed since 1988 under the current CRFMP. That Plan allows for a tribal harvest rate on B-run steelhead of 32% although the average harvest rate over that the last 10 years has been only 24.1% and over the last five years has averaged 20.5% (TAC 1997). Although this can be construed to reflect conservative management, the fact that the species has declined substantially over the last 10 years also suggests that the original management objective was too high when combined with the continuing cycle of activities mentioned above. Nevertheless, a 15% wild B-run harvest rate cap would represent a 38% reduction from the 10 year average harvest rate for the tribal fishery and a 53% reduction from the CRFMP allowed harvest rate of 32%. A similar analysis is not available at this time to consider the nontreaty fishery although the combined impact in these fisheries has now been reduced to less than 2%. Conceptually the analysis would compare current harvest rates with those observed prior to implementation of selective fishing and associated with reductions in commercial harvest in recent years.

Managing the tribal fishery with a 10% harvest rate objective and a 15% harvest rate cap will require use of all reasonable and immediately available management actions. A 15% harvest rate cap represents 38% reduction from the average harvest rate that occurred over the last 10 years and represents a substantial reduction in harvest as a factor of decline. The survival and recovery of SRB steehead is not likely to hinge on the remaining margin of impact that occurs in this fishery. Whether the species survives will depend primarily on actions taken in other sectors to improve survival. Based on these considerations, NMFS concludes that the proposed fall season fishery, as modified my this reasonable and prudent alternative, is not likely to jeopardize the continued existence of SRB steelhead.

Management actions designed to reduce the harvest of wild B-run steelhead will likely have the additional benefit of reducing impacts to A-run steelhead as well. The information necessary to estimate those additional savings is not available at this time, but is not considered critical for the purposes of this consultation since they are not subject to a jeopardy determination and hence no RPA analysis.

Because this Biological Opinion has found jeopardy, the USFWS is required to notify NMFS of its final decision on the implementation of the reasonable and prudent alternative.

IX. Incidental Take Statement

Section 9 of the ESA and federal regulations promulgated pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without special exemption. Although there is currently no section 4(d) rule that prohibits or restricts taking of SRB steelhead, NMFS is nevertheless required by section 7(b)(4) to include an incidental take statement in this biological opinion. Furthermore the terms and conditions in section IX.D below "must be complied with." Section 7(b)(4)(iv). Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct. Harass is defined as actions that create the likelihood of injuring listed species to such an extent as to significantly alter normal behavior patterns which include, but are not limited to, breeding, feeding, and sheltering. Incidental take is take of listed animal species that results from, but is not the purpose of, the Federal agency or the applicant carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not prohibited taking, provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below are non-discretionary; they must be implemented by the action agency so that they become binding conditions of any grant or permit issued to the applicant, as appropriate, in order for the exemption in section 7(o)(2) to apply.

An incidental take statement specifies the impact of any incidental taking of endangered or threatened species. It also provides reasonable and prudent measures that are necessary to minimize impacts and sets forth terms and conditions with which the action agency must comply in order to implement the reasonable and prudent measures.

A. Amount or Extent of the Take

The amount of anticipated take is expressed here in terms of harvest rates since it is the harvest rates rather than estimates of individual mortalities that limit the extent of allowable take. The combined effect of all nontreaty fisheries considered here are will result in a 0.3% harvest rate on LCR steelhead, a 2.0% harvest rate on UCR wild A-run steelhead, a 13.8% harvest rate on UCR hatchery A-run steelhead, a 1.7% harvest rate on SRB wild A-run steelhead, and a 1.8% harvest rate on SRB wild B-run steelhead. The combined effect of all treaty Indian fisheries considered here will result in a 0.3% harvest rate on LCR steelhead, a 7.9% harvest rate on all A-run steelhead and no more than a 15% harvest rate on wild B-run steelhead. The Wanapum tribal fishery will result in a 0.2% harvest rate on UCR wild A-run steelhead and a 0.3% harvest rate on UCR hatchery A-run steelhead.

B. Effect of the Take

In this biological opinion, NMFS has determined that the level of anticipated take under the reasonable and prudent alternative is not likely to jeopardize the continued existence of listed

salmonid species or result in the destruction or adverse modification of designated critical habitat when all of the reasonable and prudent alternatives are implemented.

C. Reasonable and Prudent Measures

NMFS concludes that the following reasonable and prudent measures are necessary and appropriate to minimize the impacts from fisheries considered in this opinion to listed UCR and SRB steelhead.

1. The Washington Department of Fish and Wildlife (WDFW) shall monitor the passage of salmonids at Columbia River dams. The TAC shall provide necessary inseason estimates of run size.

2. WDFW and Oregon Department of Fish and Wildlife (ODFW) shall monitor the catch for recreational and commercial fisheries in Zones 1-6.

3. WDFW and ODFW shall sample the recreational and commercial fisheries in Zones 1-6 for stock composition.

4. The Columbia River Inter-tribal Fish Commission (CRITFC) and its member tribes shall monitor the catch in all Zone 6 ceremonial and subsistence (C&S) fisheries.

5. CRITFC and its member tribes shall sample the Zone 6 C&S fishery for stock composition.

6. The TAC shall account for the catch of each fishery as it occurs through the season and report to NMFS any increases in the incidental harvest rates of listed species from that expected preseason.

D. Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the ESA, the tribes and states must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

1. WDFW shall obtain daily counts of all salmonids passing Bonneville, The Dalles, John Day, and McNary dams. The TAC shall use dam counts and other available information to develop inseason updates to run size estimates for fall chinook stocks.

2. Monitoring of catch in the recreational and Zone 1-6 commercial fisheries by WDFW and ODFW shall be sufficient to provide statistically valid estimates of the salmon catch. Sampling of the commercial catch shall entail daily contact with buyers regarding the catch of the previous day. The recreational fishery shall be sampled using effort surveys and suitable measures of catch rate.

3. WDFW and ODFW shall monitor the stock composition of the recreational fisheries and Zone 1-6 commercial fisheries using a target sampling rate of 20%.

4. Monitoring of catch in the Zone 6 fisheries by CRITFC and its member tribes shall be sufficient to provide statistically valid estimates of the salmon catch. The catch monitoring program shall be stratified to include platform, hook-and-line, and gillnet fishery components.

5. CRITFC and its member tribes shall monitor the stock composition of the Zone 6 C&S fisheries using a target sampling rate of 20%.

X. Conservation Recommendations

Section 7 (a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. Conservation recommendations are discretionary measures suggested to minimize or avoid adverse effects of a proposed action on listed species, to minimize or avoid adverse modification of critical habitat, or to develop additional information. NMFS believes the following conservation recommendations are consistent with these obligations, and therefore should be implemented:

1. Available information indicates that the incidental catch of steelhead can be reduced in gillnet fisheries directed at fall chinook by using larger mesh gillnets. Research regarding the size selectivity of chinook and steelhead harvest as a function of mesh size should be continued in 1998 to better inform future decisions regarding implementation of mesh size regulations for conservtion purposes. The analysis of results should include an assessment of the potential long-term biological consequences to fall chinook of using larger mesh gear.

2. The current methods available for stock separation of wild steelhead are limited to information related to fish length or passage timing (date method). The methods give different results with respect to run size and harvest rates. Both methods have shortcomings and neither likely accurately estimates the true harvest rates or run sizes. Ongoing research that provides better information regarding stock separation should continue.

3. Restrictions on harvest for protection of wild steelhead will reduce the tribes ability to access harvestable fall chinook and hatchery steelhead using traditional fishing methods. The CRFMP parties should work with the tribes to develop alternative fishing methods that reduce impacts to wild steelhead while more selectively targeting harvestable stocks.

4. a) The states of Oregon, Washington, and Idaho should explore criteria for application and the potential for recreational fishery regulations restricting fisheries during periods of

excessively high water temperatures. These regulations may take the form of complete closures, but other compatible regulations such as night fishing may be explored.

b) The tribes and states should consider closing all cold water refugia to fishing activities during periods of excessively high mainstem water temperatures.

c) The parties should develop information outreach programs to instruct fishers on the implications of fishing during warm water conditions. This education should address the need to reduce fight time and other undue sources of fishing stress by landing fish quicker, using gear of greater strength, and by leaving in the water any fish intended to be released.

XI. Reinitiation of Consultation

This concludes formal consultation on the 1998 fall season fisheries conducted under the CRFMP and 1996-1998 Management Agreement. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take estimated in Part IX is exceeded; (2) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (3) the identified action is subsequently modified in a manner that causes an effect to listed species or critical habitat that was not considered in the Biological Opinion; (4) a new species is listed or critical habitat designated that may be affected by the identified action.

XII. References

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Appendix 1.

Columbia Basin Steelhead Status Summary
NMFS
April 15, 1998

The kinds of actions necessary for the protection of Columbia Basin steelhead depend largely on the status of the stocks. Available information is summarized below. The summary focuses on currently listed ESUs (Upper Columbia River and Snake River Basin) which are subject to higher harvest rates and increased dam interactions.

There are six ESUs of steelhead in the Columbia Basin.

Listing Status

Upper Columbia River (Group A)	Endangered
Snake River Basin (Group A and B)	Threatened
Middle Columbia River	Proposed Threatened
Lower Columbia River (wntr & smr run)	Proposed Threatened
Upper Willamette	Proposed Threatened
Southwest Washington (includes Col R tribs below Cowlitz)	Not Warranted

Stock Designations

Steelhead stocks in the Columbia Basin have traditionally been distinguished as summer or winter-run stocks based on state of sexual maturity and time of river entry. Summer-run steelhead were divided further as Group A and Group B steelhead based on age differences and run timing. Hatchery and wild stocks are also identified. ESU designations, based in part on genetic affinities, do not correspond with these traditional stock divisions. For example, winter and summer-run steelhead are included in the Lower Columbia River ESU. All Group B steelhead return to the Snake River, but the Snake has A-run steelhead too which are all part of one ESU. Because of past practice, management data bases are aligned with traditional designations. The following discussion is organized by ESU, but continues to rely on Group A and B data bases.

Summer Steelhead Harvest Management Under the CRFMP

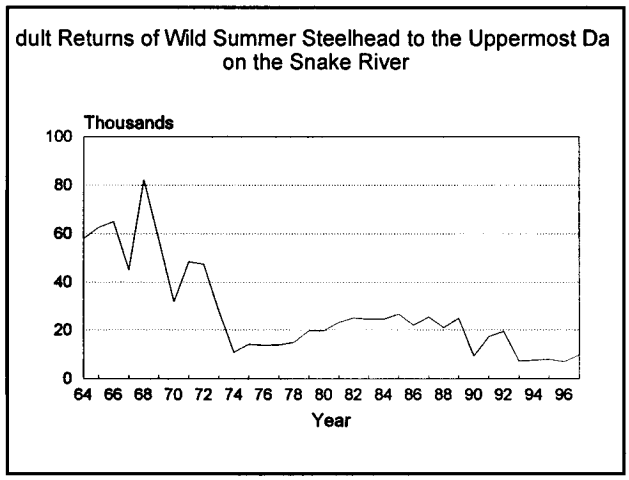
The count of natural wild steelhead at Bonneville Dam provides the basis for management of mainstem fisheries. Natural/wild (n/w) steelhead are defined to include naturally produced steelhead regardless of origin of parents. The interim management goal under the CRFMP is for 75,500 natural/wild steelhead at Bonneville including 62,200 Group A and 13,300 Group

B steelhead. The goal is expected to produce 30,000 n/w steelhead above Lower Granite Dam (LGD). The All Species Review (ASR) subdivides this further into 20,000 A-run and 10,000 B-run steelhead.

The CRFMP defines a base fishery level for fall season treaty Indian fisheries directed at upriver fall chinook. For runs less than 75,500 n/w steelhead, treaty Indian fisheries will not exceed 15% and 32% impacts on A and B-run steelhead. These harvest rates are based on the observed steelhead harvest rates during the 1984-85 fisheries. Harvest of wild steelhead in nonIndian commercial and recreational fisheries is not allowed. Harvest impacts are therefore limited to those which occur in commercial fisheries directed at other species or recreational fisheries directed at hatchery-origin steelhead.

Long Term Trends

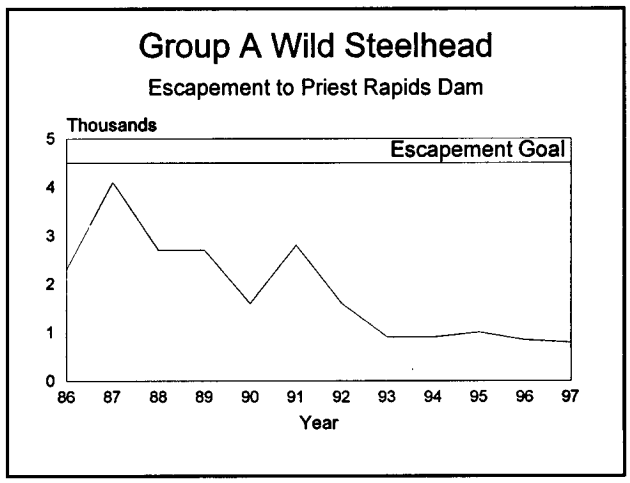
- Abundance of wild summer steelhead at the uppermost dam on the Snake River has declined from a 3-year average of 62,000 in 1964.
- There was a period of rebuilding from the mid-70's to the mid-80's to an average abundance of about 25,000.
- Abundance has since declined to a 3-year average of 8,200.



Upper Columbia River Steelhead

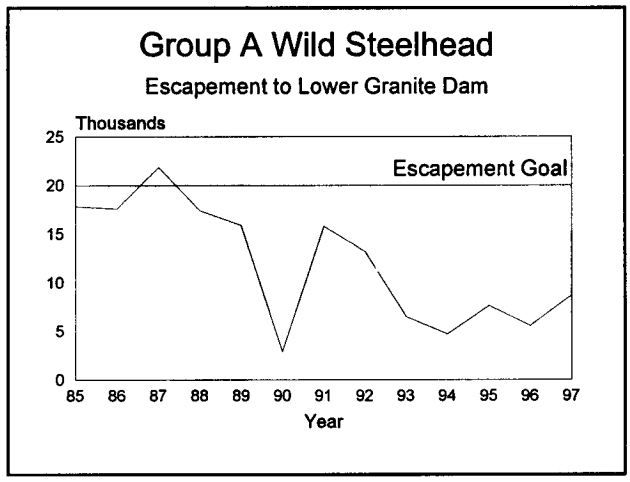
- Abundance of wild Group A steelhead to Priest Rapids Dam has declined from a 3-year average of 3,000 to 900 since 1986/87.
- There is no CRFMP escapement goal identified for this area. however, the ASR specifies 4,500 as the aggregate esc need for the subbasins above Priest Rapids Dam.
- Replacement ratios for naturally spawning fish are on the order of 0.3:1.0.
- Mainstem harvest rates on wild Group A steelhead have averaged about 18% (86-95) excluding any impacts in tributary fisheries

with Zone 6 treaty Indian fisheries during the fall season comprising the majority of the impacts (11 of the 18%).
- Prior to recent restrictions in recreational fishery, impacts to wild steelhead in tributary fisheries were on the order of 3%.



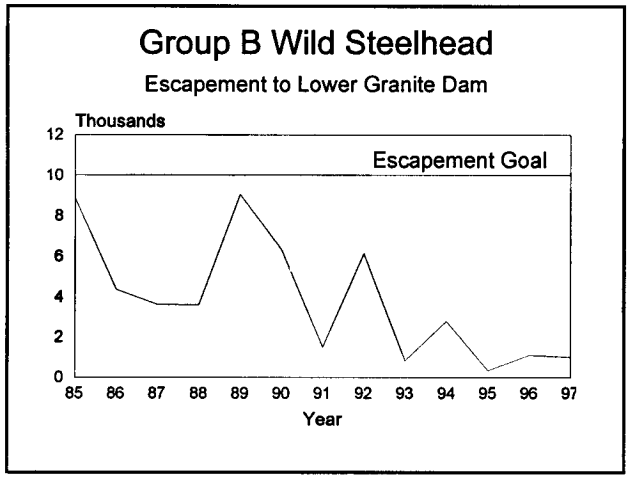
Snake Basin Steelhead
- The Snake Basin historically supported over 55% of total wild production in the Columbia Basin and now has approximately 63% of the Columbia Basin's natural production potential for wild steelhead (from Idaho comments to proposed listing of Snake River steelhead, January 3, 1997).

Snake Basin Steelhead - Group A
- Abundance of wild Group A steelhead to Lower Granite Dam has declined from a 3-year average of 19,100 to 7,300 since 1985/86.
- The current CRFMP escapement goal for wild Group A steelhead is 20,000 to Lower Granite Dam (specified in ASR).
- Mainstem harvest rates on wild Group A steelhead have averaged about 18% (86-95) excluding any impacts in tributary fisheries with 11 of the 18% occurring in Z 6 treaty Indian fisheries during the fall season.
- IDFG monitors parr density of wild A-run steelhead. Parr densities have declined from an average of about 75% of carrying capacity in 1985 to an average of about 35% in recent years.



Snake Basin Steelhead - Group B

- Abundance of wild Group B steelhead to Lower Granite Dam has declined from a 3-year average of 5,600 to 800 since 1985/86.
- The current escapement goal for wild Group B steelhead is 10,000 to Lower Granite Dam (specified in ASR).
- Idaho estimates that an escapement of 33,000 to Lower Granite is needed to achieve 70% juvenile seeding in wild and natural production areas (from Idaho Anadromous Fish Management Plan 1992-1996).
- There is approximately 3,100 miles of potential spawning habitat in the Clearwater and Salmon River basins.
- IDFG monitors parr density of wild B-run steelhead. Parr densities have been relatively stable, averaging 10-15% of carrying capacity since 1985.
- Mainstem harvest rates on wild Group B steelhead have averaged about 34% (86-95) excluding impacts in tributary fisheries.
- Impacts to wild steelhead in tributary recreational fisheries are on the order of 3%.



Conclusions and Recommendations from the ASR

The All Species Review was conducted by the Technical Advisory Committee of the CRFMP. The CRFMP requires preparation of an ASR every five years. The most recent review was completed in August 1997.

The ASR includes the following conclusions:

"Regardless of assessment methods for A and B steelhead, it is apparent that the primary goal of enhancing the upriver summer steelhead run is not being achieved. The status of upriver summer steelhead, particularly wild fish, has become a serious concern. Recent declines in all stocks, across all measures of abundance, are disturbing."

"There has been no progress toward rebuilding upriver runs since 1987. Throughout the Columbia River Basin, dam counts, weir counts, spawning surveys, and rearing densities indicate w/n steelhead abundance is declining, culminating in the propose listing of upriver stocks in 1996. Escapements have reached critically low levels despite the relatively high productivity of natural and hatchery rearing environments. Improved flows and ocean conditions should increase smolt-adult survival rates for upriver summer steelhead. However, reduced returns in recent years are likely to produce fewer progeny and lead to continued low abundance."

"Since the last All-Species Review, returns in most years have failed to meet management goals established in the CRFMP for will Group A and B steelhead. Although goals have been met reasonably often for wild Group B fish at Bonneville Dam, Escapement goals for Wild Group B steelhead at Lower Granite Dam have never been

met, an indication that adjustments are needed. (see Recommendations). Neither Bonneville nor Lower Granite goals appear adequate to seed Idaho streams under present conditions. Hatchery stocks have experienced escapement declines similar to wild stocks in recent years."

"Although steelhead escapements would have increased (in some years substantially) in the absence of mainstem fisheries, data analyzed by the TAC indicate that impacts other than mainstem CR fishery harvest are primarily responsible for the currently depressed status and the long term health and productivity of wild steelhead populations .."

"Though harvest is not the primary cause of declining summer steelhead stocks, and harvest rates have been below guidelines, harvest has further reduced escapements. Prior to 1990, the aggregate of upriver summer steelhead in the mainstem CR appears at times to have led to the failure to achieve escapement goals at LGD. Wild Group B steelhead are presently more sensitive to harvest than other salmon stocks, including the rest of the steelhead run, due to their depressed status and because they are caught at higher rates in the Z 6 fishery."

"Small or isolated populations are much more susceptible to stochastic events such as drought and poor ocean conditions. harvest can further increase the susceptibility of such populations. The CRFMP recognizes that harvest management must be responsive to run size and escapement needs to protect these populations. The parties should ensure that CRFMP harvest guidelines are sufficiently protective of weak stocks and hatchery broodstock requirements."

Recommendations of the ASR include (among others):
3. Develop alternative harvest strategies to better achieve rebuilding and allocation objectives.
8. Consider modification of steelhdead harvest rate guidelines relative to stock management units and escapement needs.

<u>Options for Supplementation of Depressed Stocks</u>
Steelhead from Wells Hatchery are included as part of the listed ESU of Upper Columbia River steelhead and are therefore appropriate for use in recovery efforts. Broodstock is not limiting.

Group A hatchery steelhead from the Snake Basin are not part of the ESU. If supplementation is part of the recovery strategy, broodstocks will have to be developed from remaining wild production areas.

There is one B-run hatchery stock in the Snake Basin that was developed at the Dworshak NFH. The stock was developed from wild steelhead from within the Clearwater Basin, is largely free of introductions from other areas, and was included as part of the ESU although not part of the listed population. However, past hatchery practice has lead to substantial divergence from wild stock characteristics. The spawn timing of hatchery stocks is much earlier than it was historically (see following figure). Idaho concludes that both A and B-run hatchery stocks are largely domesticated and demonstrate limited ability to spawn in natural habitats or produce natural offspring that contribute to sustained adult escapement (from IDFG comments to proposed listing). Although hatchery steelhead in the Snake Basin are relatively more abundant, they are unlikely to provide broodstock that can be used for supplementation and recovery purposes or, if used by necessity, will likely have diminished productivity. Development of broodstock for recovery purposes will depend largely on wild stocks which are too low to sustain withdrawal without careful consideration of the tradeoffs. Maximizing escapement of wild steelhead in the near term is therefore essential.